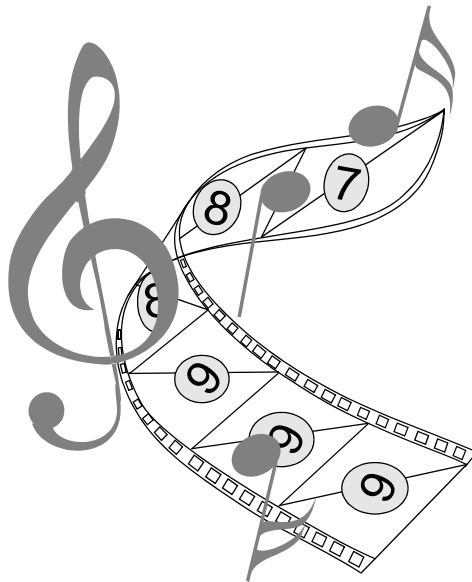




Avance Logic, Inc.

**ALS100/L/M Integrated Audio Subsystems
User's Guide**

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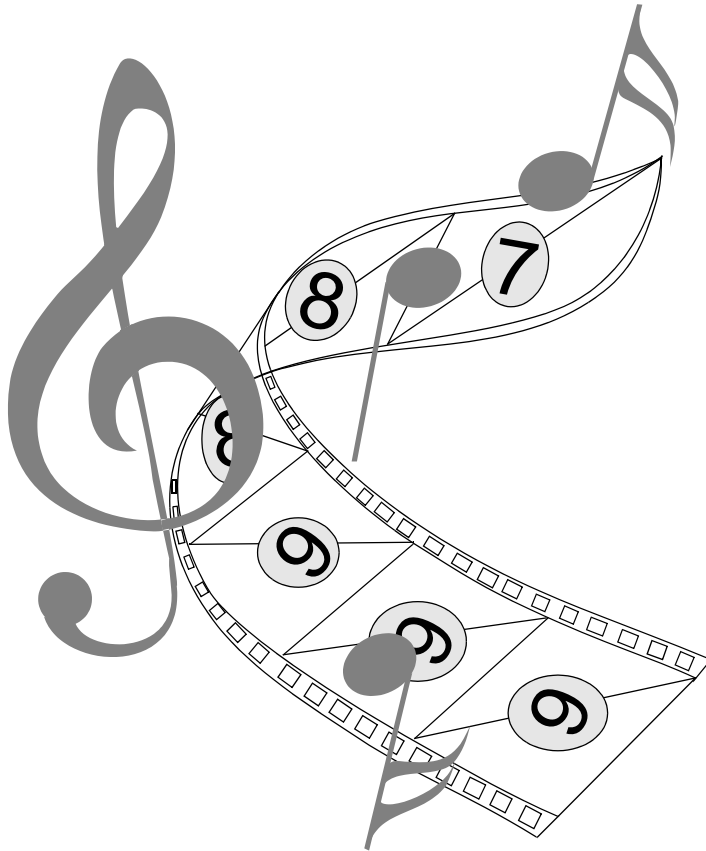




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ALS100/L/M Integrated Audio Subsystems

User's Guide



Introduction

The ALS100 Integrated Audio Subsystem, its low voltage version the ALS100L, and its multiple CD-ROM interface version the ALS100M, are highly-integrated, single chip sound products. The ALS100 and the ALS100L are functionally identical, differing only in the required power supply voltage (VCC) and the physical package of the module. The ALS100 and the ALS100M are functionally and physically identical, differing only in what functions are tested. The ALS100 is not tested with CD-ROM interfaces other than the ATAPI IDE CD-ROM interface. The ALS100 and the ALS100M are intended for use in add-in sound cards and PC motherboard applications, whereas the ALS100L is intended for use in notebook motherboard applications only. Four sound cards are described in this manual, but only three are currently available. Two of the sound cards are for the evaluation of the ALS100 and one each for the evaluation of the ALS100L and the ALS100M. Detailed design information of the four sound cards and the PC motherboard and PC Notebook designs is available in the ALS100/L/M Integrated Audio Subsystems Design Manual, Avance Logic document number 10068.

The following functions are integrated into the ALS100/L/M.

- Subsystem control logic
- Digital to analog and analog to digital conversions
- Mixer functions
- Digital to analog conversion for the synthesizer and surround sound functions
- Game/MIDI port (ALS100M requires external circuitry)
- CD-ROM controller (ATAPI IDE - ALS100 and ALS100L/
ATAPI IDE, Sony, Mitsumi, Panasonic, or SCSI II - ALS100M)

The ALS100/L/M fully supports the ISA Plug and Play standard. For non-ISA Plug and Play compatible systems, a software utility (“ISA Configuration Utility (ICU)”) is available that sets the IRQ and DMA addresses. Sound cards and motherboard implementations designed around the ALS100/L/M are completely jumper and switch free.

Control logic is built into the ALS100/L/M to support the following functions:

- Audio Input
 - CD-ROM Audio
 - Monaural In
 - Stereo Line In
 - Microphone In
- Audio Output
 - Stereo Line Out
 - Stereo Main/Surround Sound Out
- Game/MIDI Port (ALS100M requires external circuitry)
 - External MIDI input and output
 - Joystick input
- FM/Wavetable
 - Optional Yamaha OPL3 FM Synthesizer
 - Optional Yamaha OPL4 Wavetable Synthesizer
- CD-ROM Controller
 - ATAPI IDE
 - Sony (ALS100M only)
 - Mitsumi (ALS100M only)
 - Panasonic (ALS100M only)
 - SCSI External Controller Input (ALS100M only)

Hardware Features

- Single, mixed-signal, high performance VLSI sound ASIC
- Six software selectable DMA lines (0, 1, 3, 5, 6, 7)
- Seven software selectable interrupt lines (5, 7, 9, 10, 11, 12, 15)
- 8-bit ISA Plug and Play bus interface
- 8-bit or 16-bit CD-ROM interface
- 8-bit or 16-bit DMA interface with FIFO
- Game port
- MIDI port with input and output FIFO
- 8-bit or 16-bit monaural/stereo digital audio from 4 kHz to 48 kHz
- Full duplex for concurrent recording and playback

Built-in Functional Blocks

- ISA Plug and Play support logic and resource ROM
- High speed 16-bit digital to analog and analog to digital converters with filters
- Yamaha OPL3/4 FM/Wavetable Synthesizer address decode
- Digital to analog converter to support external FM/wavetable synthesis
- Thirty-two level stereo audio mixer with six input sources (DAC, synthesizer, monaural, microphone, line in, and CD audio)
- Built-in amplifier for the microphone input
- ADPCM decompression engine
- High speed 8-bit or 16-bit DMA interface with FIFO
- MPU-401 MIDI controller with FIFO
- CD-ROM controller

Software Support

- Windows 3.1
- Windows 95
- Windows NT 3.5
- Windows Sound System
- OS/2 Warp
- All DOS-based games

Compatibility

- Adlib
- All Sound Blaster Pro applications
- All Sound Blaster 16 applications
- Yamaha OPL3 FM Synthesizer
- Yamaha OPL4 Wavetable Synthesizer
- MPU-401 UART MIDI

Applications

- 16-bit stereo sound cards
- PC motherboard based sound systems
- PC Notebook sound systems (ALS100L)
- MIDI controller
- Game port
- CD-ROM controller
- Wavetable card support

Emulation

- Sound Blaster Pro
- Sound Blaster 16
- Sound Blaster ADPCM
- MPU-401 UART MIDI interface

Evaluation Sound Cards

There are five evaluation sound cards. Currently four are available. The sound cards differ in the sound system design that they embody.

AS9520 Sound Card Description

The AS9520 sound card is an example of the AS9520 sound system design and is intended for the evaluation of that design.

The AS9520 sound system design is based on the ALS100 Integrated Audio Subsystem ASIC and contains the following features.

- 16-bit ISA Plug and Play design
- ATAPI IDE CD-ROM interface
- Game/MIDI port
- Audio inputs from:
 - External Wavetable card
 - ATAPI IDE CD-ROM audio
 - Mitsumi CD-ROM audio
 - Sony CD-ROM audio
 - Microphone
 - Line In
- Audio Outputs to:
 - Line Out
 - Main/SS Speaker Out
- Yamaha OPL3 FM Synthesizer
- Wave Blaster compatible upgrade capability

AS9521 Sound Card Description

The AS9521 sound card is an example of the AS9521 sound system design and is intended for the evaluation of that design.

The AS9521 sound system design is based on the ALS100M Integrated Audio Subsystem ASIC, the multiple CD-ROM input version of the ALS100, and contains the following features.

- 16-bit ISA Plug and Play design
- CD-ROM interfaces for:
 - ATAPI IDE CD-ROM
 - Mitsumi CD-ROM
 - Sony CD-ROM
 - Panasonic CD-ROM
- SCSI CD-ROM external controller interface
- Game/MIDI port
- Audio inputs from:
 - External Wavetable card
 - ATAPI IDE CD-ROM audio
 - Mitsumi CD-ROM audio
 - Sony CD-ROM audio
 - Panasonic CD-ROM audio
 - Microphone
 - Line In
- Audio Outputs to:
 - Line Out
 - Main/SS Speaker Out
- Yamaha OPL3 FM Synthesizer
- Yamaha OPL4 Wavetable Synthesizer
- Wave Blaster compatible upgrade capability

AS9540 Sound Card Description

The AS9540 sound card is an example of the AS9540 sound system design and is intended for the evaluation of that design.

The AS9540 sound system design is based on the ALS100 Integrated Audio Subsystem ASIC and has the lowest implementation cost of all of the sound system designs. The AS9540 sound system design contains the following features.

- 16-bit ISA Plug and Play design
- ATAPI IDE CD-ROM interface (optional)
- Game/MIDI port
- Audio inputs from:
 - External Wavetable card
 - ATAPI IDE CD-ROM audio
 - Mitsumi CD-ROM audio
 - Sony CD-ROM audio
 - Microphone
 - Line In
- Audio Outputs to:
 - Line Out
 - Main/SS Speaker Out (optional)
- Yamaha OPL3 FM Synthesizer
- Wave Blaster compatible upgrade capability

AS9545 Sound Card Description

Hardware implementation of the AS9545 sound card is not currently available. The following functional description and reference to this sound card elsewhere in this manual are for informational use only.

The AS9545 sound card is an example of the AS9545 sound system design and is intended for the evaluation of that design.

The AS9545 sound system design is based on the ALS100 Integrated Audio Subsystem ASIC and contains the following features.

- 16-bit ISA Plug and Play design
- ATAPI IDE CD-ROM interface
- Game/MIDI port
- Audio inputs from:
 - External Wavetable card
 - ATAPI IDE CD-ROM audio
 - Mitsumi CD-ROM audio
 - Sony CD-ROM audio
 - Microphone
 - Line In
- Audio Outputs to:
 - Line Out
 - Main/SS Speaker Out
- Yamaha OPL3 FM Synthesizer
- Yamaha OPL4 Wavetable Synthesizer
- Wave Blaster compatible upgrade capability

AS9548 Sound Card Description

The AS9548 sound card contains an example of the AS9538 sound system design and is intended for the evaluation of that design. The AS9538 sound system design is intended for use in PC Notebooks (see “AS9538 PC Notebook Sound System Design” on page 27). The AS9548 sound card has circuitry in addition to the AS9538 sound system design so that it can operate in a standard PC for a more convenient evaluation platform.

The AS9538 sound system design is based on the ALS100L Integrated Audio Subsystem ASIC, the 3.3 V input voltage version of the ALS100, and contains the following features.

- 16-bit ISA Plug and Play design
- Game/MIDI port
- Audio inputs from:
 - ATAPI IDE CD-ROM audio
 - Sony CD-ROM audio
 - Microphone
 - Line In
- Audio Outputs to:
 - Line Out
 - Speaker Out
- Yamaha OPL3 FM Synthesizer

Evaluation Sound Card Summary

Feature	AS9520	AS9521	AS9540	AS9545	AS9548
Integrated Audio Subsystem ASIC	ALS100	ALS100M	ALS100	ALS100	ALS100L
16-bit ISA Plug and Play	●	●	●	●	●
CD-ROM Interfaces					
ATAPI IDE	●	●	Optional	●	
Mitsumi		●			
Sony		●			
Panasonic		●			
SCSI Controller Interface		●			
Game/MIDI Port	●	●	●	●	●
Audio Inputs					
External Wavetable card	●	●	●	●	
ATAPI IDE CD-ROM	●	●	●	●	●
Mitsumi CD-ROM	●	●	●	●	
Sony CD-ROM	●	●	●	●	●
Panasonic CD-ROM		●			
Microphone	●	●	●	●	●
Line In	●	●	●	●	●
Audio Outputs					
Line Out	●	●	●	●	●
Main/SS Speaker Out	●	●	Optional	●	Optional
Yamaha OPL3 FM Synthesizer	●	●	●	●	●
Yamaha OPL4 Wavetable Synthesizer		●		●	
Wave Blaster compatible upgrade	●	●	●	●	

Input/Output Connections

Phonejacks, connectors, and headers are used to connect other devices to the sound cards. A phonejack is a single hole receptacle for a phoneplug and headers and connector are multi-hole receptacles for multi-pin plugs. The Main/SS Speaker Out, Line Out, Line In, and Microphone In connections are phonejacks, the Game/MIDI Port is a D-shell 15-pin connector, and the Wavetable, CD-ROM audio, CD-ROM data/external controller connections are headers of various sizes.

Main/SS Out - The Main/Surround Sound Speaker Out phonejack provides the built-in power amplifier outputs for the left and right stereo channels. The power amplifier has a maximum output power of two watts per channel with four ohm speakers. When used in conjunction with Line Out outputs, the surround sound function is provided.

Line Out - The Line Out phonejack provides the non-amplified outputs for the left and right stereo channels. This output is for attaching powered speakers or an external audio amplifier. When used in conjunction with the Main/SS Speaker Out outputs, the surround sound function is provided.

Line In - The Line In phonejack is used to attach monaural or stereo devices such as a cassette, Digital Audio Tape, or Minidisc players for playback, mixing, or recording.

Mic In - The Microphone In phonejack is used to attach a microphone for live audio input for playback, mixing, or recording.

Game/MIDI Port - The Game/MIDI Port connector is used to attach a joystick for game interaction or to attach an external FM synthesizer for playback, mixing, or recording.

Wavetable - The Wavetable connector is used to attach a Wavetable card for playback, mixing, or recording.

ATAPI IDE/Sony CD-ROM Audio - The ATAPI IDE/Sony CD-ROM Audio connector is used to connect the audio cable from either an ATAPI IDE or Sony CD-ROM drive for playback, mixing, and recording. The AS9548 sound card has only this CD-ROM audio connector. The AS9520, AS9540, and AS9545 sound cards have two CD-ROM audio connectors and the AS9521 sound card has three CD-ROM audio connectors, but only one of them may be

used at a time.

Panasonic CD-ROM Audio - (AS9521 sound card) The Panasonic CD-ROM Audio connector is used to connect the audio cable from a Panasonic CD-ROM drive for playback, mixing, or recording. Only one of the three CD-ROM audio connectors may be used at a time.

Mitsumi CD-ROM Audio - (AS9520, AS9521, AS9540, and AS9545 sound cards) The Mitsumi CD-ROM Audio connector is used to connect the audio cable from a Mitsumi CD-ROM drive for playback, mixing, or recording. Only one of the two CD-ROM audio connectors on the AS9520, AS9540, and AS9545 sound cards or the three CD-ROM audio connectors on the AS9521 sound card may be used at a time.

ATAPI IDE CD-ROM Data - The ATAPI IDE CD-ROM Data connector is used to connect the data cable from an ATAPI IDE CD-ROM device. On the AS9521 Sound Card there are four CD-ROM data connectors and one SCSI CD-ROM External Controller connector, only one may be used at a time.

Sony CD-ROM Data - (AS9521 sound card) The Sony CD-ROM Data connector is used to connect the data cable from a Sony CD-ROM device. Of the five CD-ROM data/external controller connectors, only one may be used at a time.

Mitsumi CD-ROM Data - (AS9521 sound card) The Mitsumi CD-ROM Data connector is used to connect the data cable from a Mitsumi CD-ROM. Of the five CD-ROM data/external controller connectors, only one may be used at a time.

Panasonic CD-ROM Data - (AS9521 sound card) The Panasonic CD-ROM Data connector is used to connect the data cable from a Panasonic CD-ROM. Of the five CD-ROM data/external controller connectors, only one may be used at a time.

SCSI CD-ROM External Controller - (AS9521 sound card) The SCSI CD-ROM External Controller connector is used to attach an external SCSI CD-ROM controller. Of the five CD-ROM data/external controller connectors, only one may be used at a time.

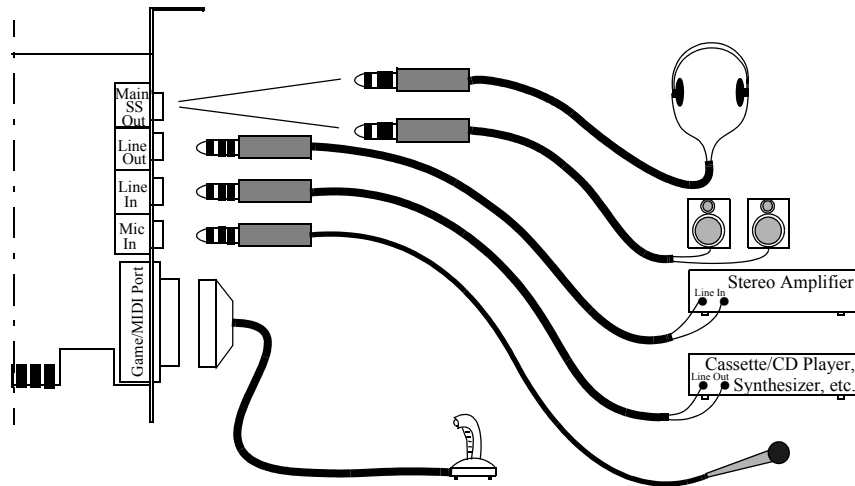
Sound Card Installation

1. Power off the system and all peripheral devices. Unplug all power cords from the power utility outlets.
2. Momentarily touch the chassis of the system unit with your bare hand to discharge any static electricity.
3. Remove the cover from the system unit.
4. Locate a free 16-bit expansion slot and remove its cover plate. Retain the screw.
5. Carefully remove the sound card from the anti-static envelope and install it into the expansion slot.
6. Secure the sound card with the screw removed earlier.
7. Attach any CD-ROM Audio, CD-ROM Data, SCSI External Controller, and Wavetable card cables to the sound card. Refer to “AS9520 Sound Card” on page 16, “AS9521 Sound Card” on page 18, “AS9540 Sound Card” on page 20, or “AS9548 Sound Card” on page 24 for the locations of the connectors.

Note: Only one CD-ROM Audio and one CD-ROM Data cable may be connected to the sound card at a time. If installing an ATAPI IDE CD-ROM and the sound card has no ATAPI IDE CD-ROM Data cable connector or you do not wish to use the ATAPI IDE CD-ROM controller on the sound card, connect the CD-ROM Data cable to the secondary IDE interface connector on the motherboard. If a CD-ROM Data cable (ATAPI IDE, Panasonic, Mitsumi, or Sony) is connected to a CD-ROM Data cable connector on the sound card, the secondary IDE interface on the motherboard must be disabled. See your system instructions for the procedure.

8. Replace the system unit cover.

9. Attach all external devices to the sound card as shown below.



Note: If anything is connected to the Game/MIDI Port on the sound card, nothing can be connected to any other Game/MIDI Port connector on the system.

10. Plug all power cords into power utility outlets.
11. Power on the system and install the appropriate software driver. Refer to “Software Driver Installation” on page 29 for instructions on installing the software driver.

I/O Addresses

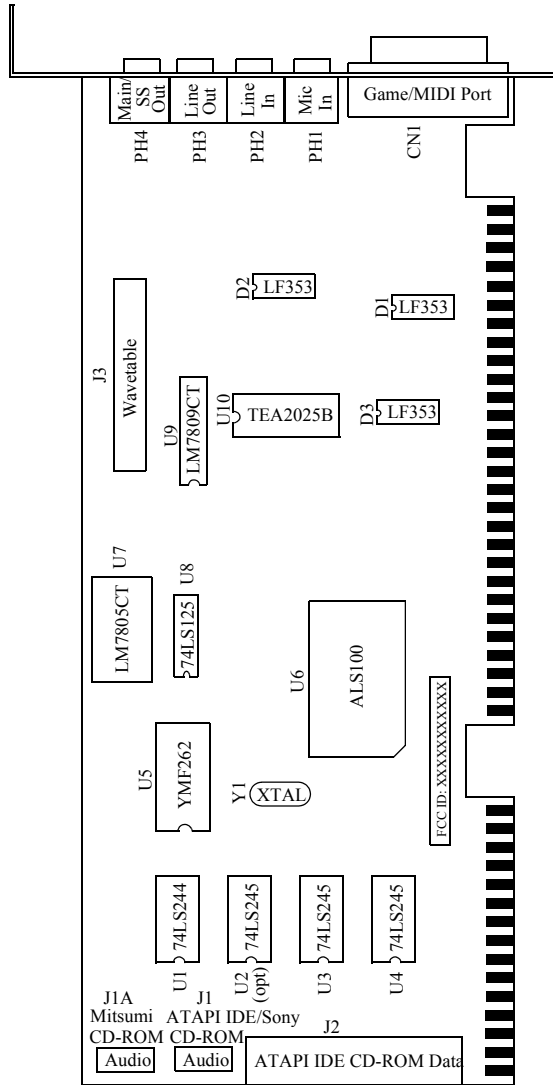
The following table shows the addresses occupied by the devices supported by the sound system designs.

I/O Address Range	Devices
170H to 177H, 376H to 377H	ATAPI IDE CD-ROM Interface
200H, 201H	Game Port
220H to 22FH	Audio Interface
330H to 331H	MPU-401 UART MIDI Interface
388H to 38FH	FM Music Synthesizer

PC Motherboard Settings

All of the sound cards and sound system designs based on the ALS100/L/M Integrated Audio Subsystems are completely compatible with the ISA Plug and Play interface. No jumpers or switch settings are required.

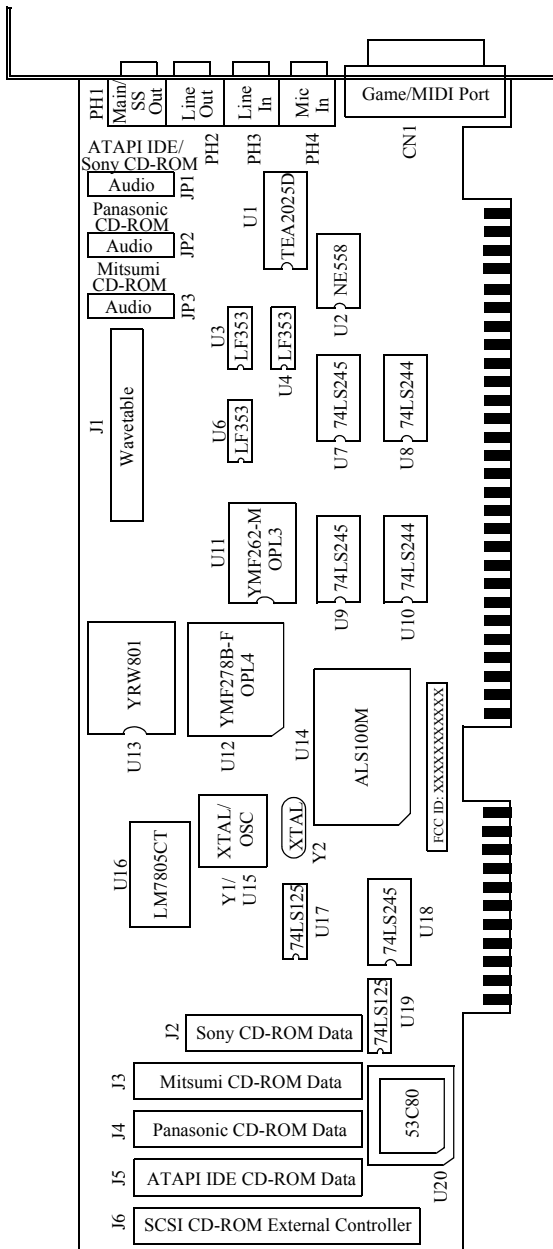
AS9520 Sound Card



Specifications:

Item	Specification
System Requirements	<ul style="list-style-type: none"> • An 80386 computer or higher with an EGA or VGA card installed (VGA recommended) • 5 MB of hard disk space • An unused 16-bit expansion slot
Input/Output Connectors	<ul style="list-style-type: none"> • Wavetable Input/Output • Game/MIDI Port Input/Output • ATAPI IDE CD-ROM Data Input/Output • Line Out Output • Main/SS Out Output • Line In Input • Mic In Input • ATAPI IDE/Sony CD-ROM Audio Input • Mitsumi CD-ROM Audio Input
Card Size	6.25 inches wide by 4.0 inches high
Raw Card Stock	Standard thickness with two internal planes
Bus Connector	ISA Plug and Play
Operating Temperature	0 to 70° C
Storage Temperature	-50 to 125° C
Operating Humidity	15 to 90%
Storage Humidity	0 to 90%

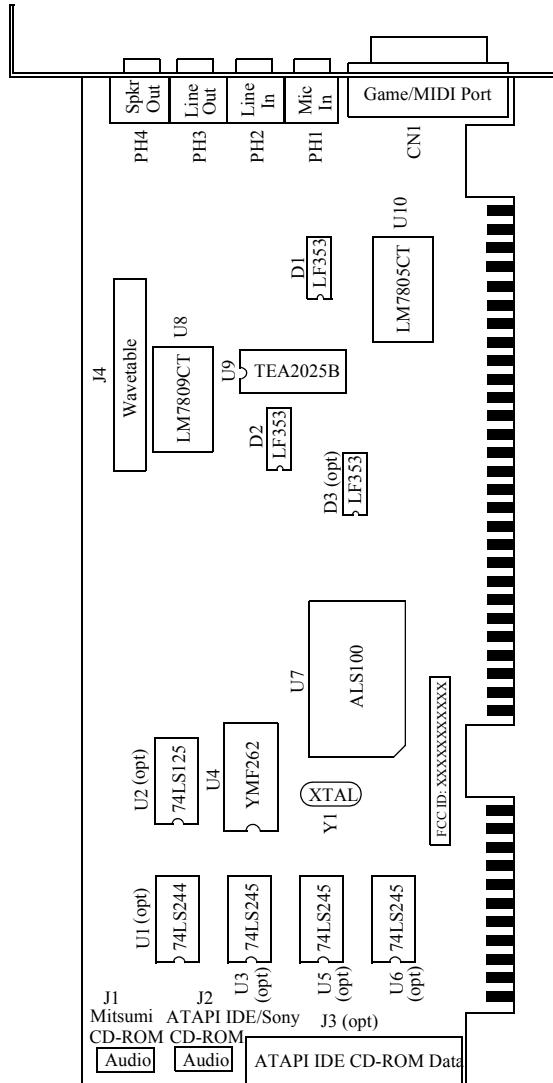
AS9521 Sound Card



Specifications

Item	Specification																												
System Requirements	<ul style="list-style-type: none"> • An 80386 computer or higher with an EGA or VGA card installed (VGA recommended) • 5 MB of hard disk space • An unused 16-bit expansion slot 																												
Input/Output Connectors	<table border="0"> <tr> <td>• Wavetable</td> <td>Input/Output</td> </tr> <tr> <td>• Game/MIDI Port</td> <td>Input/Output</td> </tr> <tr> <td>• Sony CD-ROM Data</td> <td>Input/Output</td> </tr> <tr> <td>• Mitsumi CD-ROM Data</td> <td>Input/Output</td> </tr> <tr> <td>• Panasonic CD-ROM Data</td> <td>Input/Output</td> </tr> <tr> <td>• ATAPI IDE CD-ROM Data</td> <td>Input/Output</td> </tr> <tr> <td>• SCSI CD-ROM External Controller</td> <td>Input/Output</td> </tr> <tr> <td>• Line Out</td> <td>Output</td> </tr> <tr> <td>• Main/SS Out</td> <td>Output</td> </tr> <tr> <td>• Line In</td> <td>Input</td> </tr> <tr> <td>• Microphone In</td> <td>Input</td> </tr> <tr> <td>• ATAPI IDE/Sony CD-ROM Audio</td> <td>Input</td> </tr> <tr> <td>• Mitsumi CD-ROM Audio</td> <td>Input</td> </tr> <tr> <td>• Panasonic CD-ROM Audio</td> <td>Input</td> </tr> </table>	• Wavetable	Input/Output	• Game/MIDI Port	Input/Output	• Sony CD-ROM Data	Input/Output	• Mitsumi CD-ROM Data	Input/Output	• Panasonic CD-ROM Data	Input/Output	• ATAPI IDE CD-ROM Data	Input/Output	• SCSI CD-ROM External Controller	Input/Output	• Line Out	Output	• Main/SS Out	Output	• Line In	Input	• Microphone In	Input	• ATAPI IDE/Sony CD-ROM Audio	Input	• Mitsumi CD-ROM Audio	Input	• Panasonic CD-ROM Audio	Input
• Wavetable	Input/Output																												
• Game/MIDI Port	Input/Output																												
• Sony CD-ROM Data	Input/Output																												
• Mitsumi CD-ROM Data	Input/Output																												
• Panasonic CD-ROM Data	Input/Output																												
• ATAPI IDE CD-ROM Data	Input/Output																												
• SCSI CD-ROM External Controller	Input/Output																												
• Line Out	Output																												
• Main/SS Out	Output																												
• Line In	Input																												
• Microphone In	Input																												
• ATAPI IDE/Sony CD-ROM Audio	Input																												
• Mitsumi CD-ROM Audio	Input																												
• Panasonic CD-ROM Audio	Input																												
Card Size	8.25 inches wide by 4.0 inches high																												
Raw Card Stock	Standard thickness with two internal planes																												
Bus Connector	ISA Plug and Play																												
Operating Temperature	0 to 70° C																												
Storage Temperature	-50 to 125° C																												
Operating Humidity	15 to 90%																												
Storage Humidity	0 to 90%																												

AS9540 Sound Card



Specifications:

Item	Specification
System Requirements	<ul style="list-style-type: none"> • An 80386 computer or higher with an EGA or VGA card installed (VGA recommended) • 5 MB of hard disk space • An unused 16-bit expansion slot
Input/Output Connectors	<ul style="list-style-type: none"> • Wavetable Input/Output • Game/MIDI Port Input/Output • ATAPI IDE CD-ROM Data (Optional) Input/Output • Line Out Output • Speaker Out (Surround Sound Optional) Output • Line In Input • Mic In Input • ATAPI IDE/Sony CD-ROM Audio Input • Mitsumi CD-ROM Audio Input
Card Size	6.5 inches wide by 4.0 inches high
Raw Card Stock	Standard thickness with no internal planes
Bus Connector	ISA Plug and Play
Operating Temperature	0 to 70° C
Storage Temperature	-50 to 125° C
Operating Humidity	15 to 90%
Storage Humidity	0 to 90%

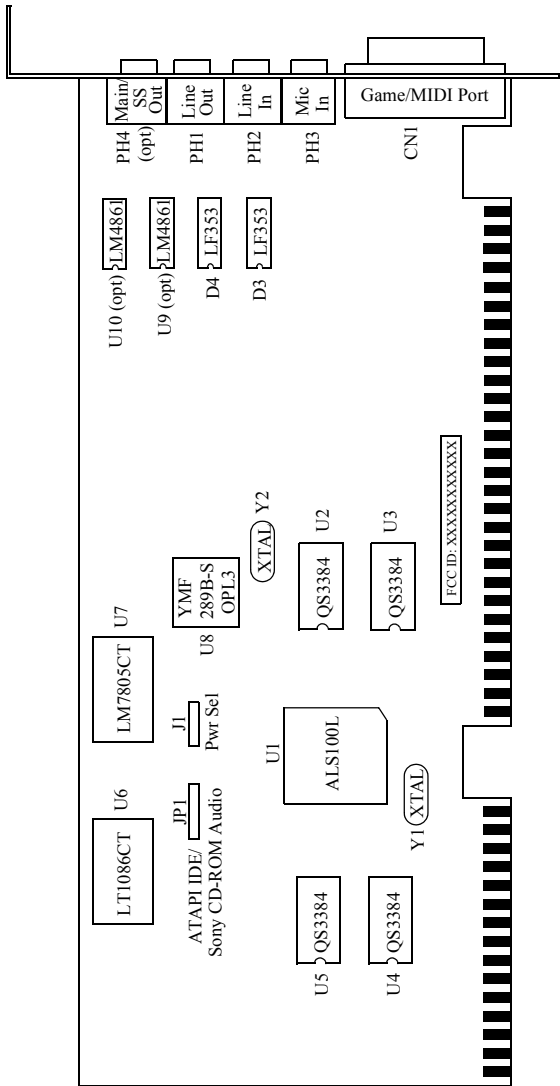
AS9545 Sound Card

Hardware implementation of the AS9545 sound card is not currently available. The functional description (see “AS9540 Sound Card Description” on page 7) and the following specifications are for informational use only.

Specifications

Item	Specification
System Requirements	<ul style="list-style-type: none"> • An 80386 computer or higher with an EGA or VGA card installed (VGA recommended) • 5 MB of hard disk space • An unused 16-bit expansion slot
Input/Output Connectors	<ul style="list-style-type: none"> • Wavetable Input/Output • Game/MIDI Port Input/Output • ATAPI IDE CD-ROM Data Input/Output • Line Out Output • Main/SS Out Output • Line In Input • Microphone In Input • ATAPI IDE/Sony CD-ROM Audio Input • Mitsumi CD-ROM Audio Input
Card Size	Not available
Raw Card Stock	Not available
Bus Connector	ISA Plug and Play
Operating Temperature	0 to 70° C
Storage Temperature	-50 to 125° C
Operating Humidity	15 to 90%
Storage Humidity	0 to 90%

AS9548 Sound Card



Specifications

Item	Specification												
System Requirements	<ul style="list-style-type: none"> • An 80386 computer or higher with an EGA or VGA card installed (VGA recommended) • 5 MB of hard disk space • An unused 16-bit expansion slot 												
Input/Output Connectors	<table border="0" style="width: 100%;"> <tr> <td style="width: 80%;">• Game/MIDI Port</td> <td style="width: 20%;">Input/Output</td> </tr> <tr> <td>• Line Out</td> <td>Output</td> </tr> <tr> <td>• Speaker Out</td> <td>Output</td> </tr> <tr> <td>• Line In</td> <td>Input</td> </tr> <tr> <td>• Microphone In</td> <td>Input</td> </tr> <tr> <td>• ATAPI IDE/Sony CD-ROM Audio</td> <td>Input</td> </tr> </table>	• Game/MIDI Port	Input/Output	• Line Out	Output	• Speaker Out	Output	• Line In	Input	• Microphone In	Input	• ATAPI IDE/Sony CD-ROM Audio	Input
• Game/MIDI Port	Input/Output												
• Line Out	Output												
• Speaker Out	Output												
• Line In	Input												
• Microphone In	Input												
• ATAPI IDE/Sony CD-ROM Audio	Input												
Card Size	6.25 inches wide by 4.0 inches high												
Raw Card Stock	Standard thickness with no internal planes												
Bus Connector	ISA Plug and Play												
Operating Temperature	0 to 70° C												
Storage Temperature	-50 to 125° C												
Operating Humidity	15 to 90%												
Storage Humidity	0 to 90%												

AS9539 PC Motherboard Sound System Design

The AS9539 sound system design is intended to be incorporated into the PC motherboard and therefore no sound card is available for the evaluation of this design.

The AS9539 sound system design is based on the ALS100 Integrated Audio Subsystem ASIC and is a 16-bit ISA Plug and Play design with a Game/MIDI port, audio inputs from ATAPI IDE/ Sony and Mitsumi CD-ROM audio connectors, a Wavetable connector, and Microphone In and Line In jacks, and an output from a Line Out jack. The AS9539 sound system design contains a Yamaha OPL3 FM Synthesizer and has Wave Blaster compatible upgrade capability.

The AS9539 sound system design includes the Audio I/O and Game/MIDI Port riser card. The riser card contains jacks for Microphone In, Line In, and Line Out and a connector for the Game/MIDI port and plugs onto the motherboard.

AS9538 PC Notebook Sound System Design

The AS9538 sound system design is based on the ALS100L Integrated Audio Subsystem ASIC, the 3.3 V input voltage version of the ALS100. It is a 16-bit ISA Plug and Play design with a Game/MIDI port, audio inputs from an ATAPI IDE/Sony CD-ROM audio connector and Microphone In and Line In jacks, and outputs from Line Out and an optional Speaker Out jacks. The AS9538 sound system design contains a Yamaha OPL3 FM Synthesizer.

The AS9548 sound card contains an example of the AS9538 sound system design and is intended for the evaluation of that design (see “AS9548 Sound Card Description” on page 9 and “AS9548 Sound Card” on page 24). The AS9548 sound card has circuitry in addition to the AS9538 sound system design so that it can operate in a standard PC for a more convenient evaluation platform.

Software Applications Supported

Applications	Diskette Names
Windows 3.1	ALS100 DOS/Windows 3.1/Windows 95 Drivers and Utilities
Windows 95	ALS100 DOS/Windows 3.1/Windows 95 Drivers and Utilities
Windows NT 3.5	Not currently available
OS/2 Warp	Not currently available
DOS	ALS100 DOS/Windows 3.1/Windows 95 Drivers and Utilities

Software Driver Installation

DOS and Windows 3.1

1. Install the ALS100/L/M sound card (see “Sound Card Installation” on page 13) and power on the system.
2. Insert the “ALS100 DOS/Windows 3.1/Windows 95 Drivers and Utilities” diskette into diskette drive A (or B).
3. If Windows 3.1 is running, exit the application.
4. At the C:\> prompt, type **a:** (or **b:**) and press the Enter key. At the A:\> prompt, type **install** and press the Enter key.
5. The Avance Sound Chip Installation Program screen will be displayed showing the following defaults.

```
Avance software install to: C:\ALSOUND
Microsoft Windows path   : C:\WINDOWS
System boot up drive     : C:\
```

6. If Windows 3.1 is installed:
 - To make changes to the defaults, select the parameter with the Up/Down Arrow keys and press the Enter key. Then change the parameter and press the Enter key again to accept the change.
 - When satisfied with the new parameters or to accept the defaults, select “Accept the above” with the Up/Down Arrow keys and press the Enter key.
7. If Windows 3.1 is not installed:
 - Select the Microsoft Windows path parameter with the Up/Down Arrow keys and press the Enter key.
 - Either change the Microsoft Windows path and press the Enter key or, if installation of the Windows driver is not desired, just press the ESC key.
 - Make any other changes to the defaults and accept the new parameters by the method described above.

8. The installation of the Avance Logic software drivers will now begin.
9. When all of the files are copied to the fixed disk, install.exe will automatically update the system.ini and progman.ini files, saving copies of the original files with the extension “.als”, and the alsetup.exe utility will automatically start. Use the instructions given in “Setup Utility Program” on page 31 to setup the ALS100/L/M sound card.
10. When the installation and set up are complete, remove the diskette from the diskette drive.

Windows 95

1. Install the ALS100/L/M sound card (see “Sound Card Installation” on page 13) and power on the system.
2. When the “New Hardware Found” dialog box appears, select “Driver from disk provided by hardware manufacturer”, and click on [OK].
3. Insert the “ALS100 DOS/Windows 3.1/Windows 95 Drivers and Utilities” diskette into diskette drive A (or B) and click on [OK]. Windows 95 will automatically copy all of the needed files and setup the ALS100/L/M sound card.
4. When the installation completes, remove the diskette from the diskette drive.

Windows NT 3.5

The software driver for Windows NT 3.5 is not currently available.

OS/2 Warp

The software driver OS/2 Warp is not currently available.

Setup Utility Program

Alsetup.exe

This utility is used to set up the ALS100/L/M sound card. It is automatically started when the Avance Logic software drivers are first installed in a DOS or Windows 3.1 application. It should be rerun anytime the system hardware configuration is changed or a change to the ALS100/L/M sound card configuration is desired. The alsetup.exe utility resides in the directory into which the Avance Logic software drivers were stored.

To run the alsetup.exe utility, perform the following.

1. If Windows 3.1 is running, exit the application and at the C:\> prompt, set the current directory to the directory containing the alsetup.exe utility (ALSOUND was the default directory at installation time), type alsetup.exe, and then press the Enter key to execute the utility.
2. The ALS100 1.0 Setup Program screen will be displayed. Use the Up/Down/Left/Right Arrow, Tab, Enter, and ESC keys and/or the mouse to select and set options in menus, to move between menus, and to make and set changes to values.
3. In the Main Menu, select “Configure” to begin configuring the ALS100/L/M sound card. The Device menu will be displayed.
4. In the Device menu, select “SB16” to configure the sound blaster. The SB16 Configuration screen showing the I/O port, DMA, and IRQ settings will be displayed. The default settings are: I/O Port: 220, DMA: 1 and 5, and IRQ: 5. Select and set any changes or accept the defaults and return to the Device menu.
5. In the Device menu, select “MPU401” to configure the external MIDI. The Enable/Disable box will be displayed. Select “Enable” to enable the external MIDI or select “Disable” to disable the external MIDI. If the external MIDI is enabled, the MPU401 Configuration screen showing the I/O port and IRQ settings will be displayed. The default settings are: I/O Port: 330 and IRQ: 9. Select and set any changes or accept the defaults and return to the Device menu.

6. In the Device menu, select “CD-ROM” to configure the CD-ROM. The IDE/Disable box will be displayed. Select “IDE” to enable the CD-ROM or select “Disable” to disable the CD-ROM.
7. In the Device menu, select “ADLIB” to configure the OPL3. The Enable/Disable box will be displayed. Select “Enable” to enable the OPL3 or select “Disable” to disable the OPL3.
8. In the Device menu, select “GAMEPORT” to configure the game port. The Enable/Disable box will be displayed. Select “Enable” to enable the game port or select “Disable” to disable the game port.
9. Press the ESC key to return to the Main Menu.
10. In the Main Menu, select “Set Volume”. The Setting Volume screen will be displayed. Make and set any changes or accept the existing settings and return to the Main Menu.
11. In the Main Menu, select “Sound Test”. The 8-Bit Sound/16-Bit Sound/FM box will be displayed. Select each mode and verify the correct operation of the ALS100/L/M sound card. Follow the instructions given for each mode. If the sound card does not operate correctly in all modes, reconfigure it by rerunning this procedure. Press the ESC key to end the Sound Test and return to the Main Menu.
12. When satisfied with the operation of the ALS100/L/M sound card, select “Quit Test” and press the Enter key to exit the utility.

Trouble Shooting

The ALS100/L/M sound card is designed to run trouble free once it is installed and setup. Most problems will be encountered during installation and setup or will be encountered later when something is changed in the system. The following are descriptions of and solutions for the more common problems that you may encounter. Please review these problems before requesting technical assistance.

Problems in DOS

- 1. Problem:** Cannot load the CD-ROM software driver

Cause: The CD-ROM port may not be enabled. Check the config.sys file for the line “device=c:\alsound\cdsetup.sys”. If it is not present, perform the steps out lined in the Solution. If it is present, call for technical assistance.

Solution: Run the alsetup.exe utility. In the Device menu, select “CD-ROM” and press [Enter] to configure the CD-ROM. In the next screen, select “Enable” and press [Enter] to enable the CD-ROM and return to the Device menu. Select “Quit Test” and press [Enter] to exit the utility.

Verify that the line “device=c:\alsound\cdsetup.sys” is now in the config.sys file and then proceed to install the CD-ROM software driver provided with your CD-ROM drive.
- 2. Problem:** No sound when playing a DOS game

Cause: There may be a conflict in the SB16 settings.

Solution: Rerun the alsetup.exe utility and try another Port, DMA, or IRQ address.

Problems in Windows 3.1

1. Problem: There is no “Sound” or “MIDI Sequencer” item in the Device pull-down menu in the Media Player or the almixer.exe application does not work.
- Cause: The MIDI software driver may not be loaded. Check the system.ini file for the following lines. If any are missing, perform the steps outlined in the Solution. If all are present, call for technical assistance.
- ```
[boot]
drivers=mmsystem.dll msmixmgr.dll

[drivers]
Wave=alsound.driv
Aux=alsound.driv
Mixer=alsound.driv
Midi=alsopl3.driv
Midi1=alsmpu.driv
Midi2=alsound.driv

[386Enh]
device=vcmd.386
device=vcad.386
device=vals.386
device=alsopl3.386
```
- Solution: Run the alsetup.exe utility in its entirety.

## FCC Notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Re-orient or relocate the receiving antenna.
2. Increase the separation between the equipment and the receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

Shielded interconnect cables must be employed with this equipment to insure compliance with the pertinent RF emission limits governing this device.

Changes or modifications not expressly approved by Avance Logic could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

## Technical Support

Avance Logic, Inc. is committed to providing the best technical support possible for our products. Our technical support team is standing by to assist you in any way that they can. To better serve you, may we suggest that you review our BBS and our WWW site before requesting assistance. Answers to commonly asked questions and the latest information are posted there for your convenience.

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Closed Holidays





